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APPELLANT'S BRIEF Address to: Mail Stop Appeal Brief-Patents Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	Application Number	10/037,757
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	First Named Inventor	Carol T. Schembri
	Examiner	Betty J. Forman
	Group Art	1634
	CHEMICAL ARRAYS	

Sir:

This Brief is filed in support of Applicant's appeal from the Examiner's Rejection dated March 2, 2006. No claims have been allowed. Claims 1-10, 12-20, 22-24 and 26-28 are pending. Claims 11, 21 and 25 were canceled during prosecution. Claims 1-10, 12-20, 22-24 and 26-28 are appealed. A Notice of Appeal was filed on March 28, 2006.

The Board of Appeals and Interferences has jurisdiction over this appeal pursuant to 35 U.S.C. §134.

The Commissioner is hereby authorized to charge deposit account number 50-1078, reference no. 10004108-1 to cover any fee required under 37 C.F.R. §1.17(c) for filing Applicant's brief. Additionally, in the event that the fee transmittal or other papers are separated from this document and/or other fees or relief are required, the Applicants petition for such relief, including extensions of time, and authorize the Commissioner to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.21 which may be required by this paper, or to credit any overpayment, to the above disclosed deposit account.

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REAL PARTY IN INTEREST

The inventors named on this patent application assigned their entire rights to the invention to Agilent Technologies, Inc. See assignment recorded at Reel/Frame 013521/0512.

RELATED APPEALS AND INTERFERENCES

There are currently no other appeals or interferences known to the Appellant, the undersigned Appellant's representative, or the assignee to whom the inventor assigned his rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal.

STATUS OF CLAIMS

The present application was filed on October 18, 2001 with Claims 1-25. On January 30, 2004 a restriction requirement was issued. In the Appellant's response filed February 27, 2004 the Appellants elected to prosecute Group I, Claims 1-24. On May 11, 2004 a first substantive Office Action issued in which Claim 25 was withdrawn from consideration by the Examiner as being drawn to a non-elected species. In an August 9, 2004 response to the first Office Action, Claims 1, 3, 4, 7, 14-16 and 19 were amended. Claims 11, 21 and 25 were canceled. Claim 26 was added. On August 30, 2004 a Notice of Non-Compliant Amendment was issued. An amended response was filed September 21, 2004. A Final Rejection issued on December 1, 2004. Subsequent to the issuance of the Final Rejection, on January 28, 2005, Claims 1 and 14 were amended. However, in a March 14, 2005 Advisory Action it was indicated that these amendments were not entered. On March 25, 2005, in response to the Advisory Action, the Appellant's filed a Request for Continued Examination. A non-final Office Action issued on June 13, 2005 in which the amendments made to Claims 1 and 14 were entered. On September 8, 2005 the Appellants amended Claims 8 and 19 and Claims 27 and 28 were added. On November 17, 2005 the Office initiated a telephonic interview during which the Office proposed a suggested amendment to the claims. The suggested amendment was not deemed acceptable and on November 29, 2005 a Final Rejection

was issued wherein Claims 1-7, 9, 10, 12-18, 20, 22-24 and 26-28 were rejected and Claims 8 and 19 were objected to as being dependent on a rejected base claim. On February 16, 2006 the Appellants filed a response to the Final Rejection in which none of the claims were amended. On March 2, 2006 the Office issued an Advisory Action and on March 28, 2006 the Appellants filed a Notice of Appeal. Hence, Claims 1-7, 9, 10, 12-18, 20, 22-24 and 26-28 are pending in the present application and stand rejected. Claims 8 and 19 are pending and are objected to. Claims 1-10, 12-20, 22-24 and 26-28 are appealed.

STATUS OF AMENDMENTS

No amendments to the claims were filed subsequent to issuance of the Final Rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention is drawn to an array assembly and methods of using the same. Specifically, the array assembly is flexible and includes: a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer, and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on said front surface from reaching the plastic base layer. The subject array assembly and its method of use may be employed in a variety of different applications, including the detection of nucleic acids. Below is a description of each appealed claim and where support for each can be found in the specification (listed in parentheses).

Independent Claim 1 claims an array assembly that includes a plastic base layer (see the specification at pg. 4, line 16), a continuous glass layer forward of the base layer (see the specification at pg. 4, lines 16-17 and Fig. 1), an array of polymers having a pattern of features on a front surface of the glass layer (see the specification at pg. 4, lines 16-17), and a layer between the base and glass layers that blocks at least 10% of

an illuminating light incident on the front surface from reaching the plastic base layer (see the specification at pg. 14, lines 22-23). Additionally, the array assembly is flexible (see the specification at pg. 8, lines 21-25).

Claim 2 claims an array assembly of Claim 1 wherein the polymers are biopolymers (see the specification at pg. 4, line 17).

Claim 3 claims an array assembly of Claim 1 wherein the layer between the base and glass layers is opaque (see the specification at pg. 15, lines 8-9).

Claim 4 claims an array assembly of Claim 1 wherein the layer between the base and glass layer is reflective (see the specification at pg. 4, line 21).

Claim 5 claims an array assembly of Claim 4 wherein the reflective layer comprises a metal (see the specification at pg. 4, lines 21-22).

Claim 6 claims an array assembly of Claim 4 wherein the reflective layer comprises multiple layers of dielectric materials (see the specification at pg. 4, lines 21-22).

Claim 7 claims an array assembly of Claim 4 wherein the glass layer has a thickness of 40-200 nm (see the specification at pg. 14, line 11).

Claim 8 claims an array assembly of Claim 4 wherein the plastic base layer has a fluorescence of at least ten reference units, wherein a reference unit is the integrated maximum fluorescence energies from 547 nm to 597 nm obtainable from a 1 mm thick section of fused silica when the silica is irradiated by a monochromated high pressure Xe lamp excitation source centered at 532 nm with a width at half-maximum of about 5 nm (see the specification at pg. 9, lines 6-15).

Claim 9 claims an array assembly of Claim 4 wherein the plastic base layer absorbs at least 10% of light at 532 nm incident on a front surface of the assembly (see the specification at pg. 15, lines 18-27).

Claim 10 claims an array assembly of Claim 1 wherein the assembly additionally includes an identifier on a back surface of the plastic base layer (see the specification

at pg. 12, lines 16-20).

Claim 12 claims an array assembly of Claim 1 wherein the assembly is in the form of an elongated web (see the specification at pg.4, lines 20-21).

Claim 13 claims an array assembly of Claim 12 which additionally includes multiple arrays disposed along the front surface of the glass layer (see the specification at pg. 4, lines 26-27).

Claim 14 claims a method of fabricating a flexible array assembly. The method includes providing a plastic base layer with a continuous glass layer bound thereto at a position forward of the plastic base layer (see the specification at pg. 4, lines 28-31 and Fig. 1) and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on a front surface of the glass layer from reaching the plastic base layer (see the specification at pg. 14, lines 22-23), and forming an array of polymers having a pattern of features on a front surface of the glass layer (see the specification at pg. 4, lines 31-32).

Claim 15 claims the method of fabricating a flexible array assembly of Claim 14 wherein the layer between the base and glass layers is reflective (see the specification at pg. 4, line 21).

Claim 16 claims the method of fabricating a flexible array assembly of Claim 14 wherein the layer between the base and glass layers comprises a metal (see the specification at pg. 4, lines 21-22).

Claim 17 claims the method of fabricating a flexible array assembly of Claim 16 wherein the layer comprises multiple layers of dielectric materials (see the specification at pg. 4, lines 21-22).

Claim 18 claims the method of fabricating a flexible array assembly of Claim 14 wherein the glass layer has a thickness of 0.40 to 200 nm (see the specification at pg. 14, line 11 and original Claim 18).

Claim 19 claims the method of fabricating a flexible array assembly of Claim 14

wherein the plastic base layer has a fluorescence of at least ten reference units, wherein a reference unit is the integrated maximum fluorescence energies from 547 nm to 597 nm obtainable from a 1 mm thick section of fused silica when the silica is irradiated by a monochromated high pressure Xe lamp excitation source centered at 532 nm with a width at half-maximum of about 5 nm (see the specification at pg. 9, lines 6-15).

Claim 20 claims the method of fabricating a flexible array assembly of Claim 14 wherein the method additionally includes forming an identifier on a back surface of the plastic base layer (see the specification at pg. 12, lines 16-20).

Claim 22 claims the method of fabricating a flexible array assembly of Claim 14 wherein the assembly is in the form of an elongated web (see the specification at pg.4, lines 20-21).

Claim 23 claims the method of fabricating a flexible array assembly of Claim 14 wherein multiple arrays are formed by depositing drops onto the front surface of the glass layer, which contain the polymers or polymer precursor units (see the specification at pg. 4, lines 26-27).

Claim 24 claims the method of fabricating a flexible array assembly of Claim 23 wherein the polymers are polynucleotides or peptides (see the specification at pg. 4, lines 17-18).

Claim 26 claims the method of fabricating a flexible array assembly of Claim 14 wherein the layer between the base and glass layers is opaque (see the specification at pg. 15, lines 8-9).

Claim 27 claims an array assembly of Claim 1 wherein the array assembly further includes a bonding layer between the base layer and the light blocking layer (see the specification at pg. 13, line 32 to pg 14. line 1).

Claim 28 claims the method of fabricating a flexible array assembly of Claim 14 wherein the method further includes adding a bonding layer between the base layer and

the light blocking layer (see the specification at pg. 13, line 32 to pg 14. line 1).

ALLOWABLE SUBJECT MATTER

It is noted that Claims 8 and 19 have been acknowledged by the Examiner to contain allowable subject matter.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Claims 1 – 10, 12 – 20, 22 – 24 and 26 are rejected under 35 U.S.C. §112, first paragraph, as allegedly containing new matter.

II. Claims 1 – 6, 9 – 10, 12 – 17, 20, 22 – 24 and 26 – 28 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Chen et al. (U.S. Publication No. 2001/0051714) in view of Giaver (U.S. Patent No. 3,979,184) or Dickinson (WO Publication No. 01/18524).

III. Claims 7 and 18 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Chen et al. (U.S. Publication No. 2001/0051714).

ARGUMENT

I. Claims 1 – 10, 12 – 20, 22 – 24 and 26 do not contain new matter and comply with the written description requirements of 35 U.S.C. §112, first paragraph.

In this rejection, the Office asserts that Claims 1 – 10, 12 – 20, 22 – 24 and 26 allegedly contain new matter and therefore do not comply with the written description requirements of 35 U.S.C. §112, first paragraph. In making this rejection, the Office acknowledges that the specification provides examples of an elongated web substrate and teaches that a substrate may have a glass layer, but asserts that the specification does not teach that the "continuous web" (or any web) is comprised of glass. The Appellants respectfully disagree for two main reasons.

First of all, the Appellants would like to draw the attention of the Office to paragraphs [0013] and [0036], recited herein in their entirety:

> "[0013] The various aspects of the present invention can provide any one or more of the following and/or other useful benefits. For example, when the further layer is a glass layer this allows use of well known chemistries for fabricating arrays on glass substrates even though the base layer (such as a plastic layer) may not be compatible with such chemistries. The use of a reflective layer avoids optical characteristics of the base layer (such as undesirable fluorescence) interfering with reading of the array."

> "[0036] A 'web' references a long continuous piece of substrate material having a length greater than a width. For example, the web length to width ratio may be at least 5/1, 10/1, 50/1, 100/1, 200/1, or 500/1, or even at least 1000/1."

In view of the recited passages, the Appellants contend that the specification teaches that the further layer may be a glass substrate and that the substrate may be a web. Because the substrate may be glass and because the substrate may be a web, the substrate may therefore be a glass web. Accordingly, because the substrate may be a glass web, it by definition may be long and continuous.

Additionally, the Appellants would like to draw the attention of the Office to FIG. 1 (reproduced below). According to paragraph [0049], FIG. 1 sets forth a substrate that is in the form of an elongated web (10). As can be seen, the elongated web is continuous and has a plurality of arrays (12) disposed upon its front surface (11). The specification teaches that although only four arrays (12) are shown, it is understood that the web (10) may have any number of arrays (12) such as five, ten, twenty, fifty, one hundred, five hundred, one thousand, three thousand or more all arranged end to end

along the lengthwise direction of the web (10). Accordingly, to accommodate the arrays (12), the web (10) may be at least 100 cm (or at least 200 or 500 cm) in length, or may even be greater than 1 m (or greater than 2, 5 or 10 or 100 m) in length, with a width, for example, of less than 100 cm, or even less than 50, 30, 10, 5 or 1 cm.

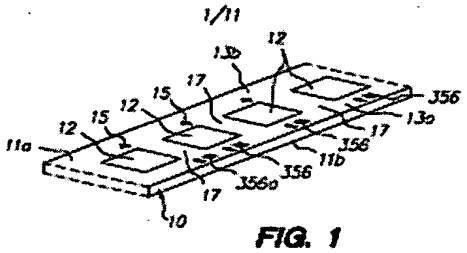


FIG. 1

Accordingly, as can be seen with reference to FIG. 1, because the specification teaches that the "substrate" may be continuous and may be made of a glass layer (see paragraph [0013], the glass layer (e.g. the substrate) may be continuous.

In light of the above, the Appellants contend that the use of the term "continuous" with reference to the glass layer is fully supported by the specification as originally filed, and therefore does not constitute new matter. Accordingly, the Appellants respectfully request the reversal of the 35 U.S.C. § 112, first paragraph rejection.

II. Claims 1 – 6, 9 – 10, 12 – 17, 20, 22 – 24 and 26 – 28 are not obvious under 35 U.S.C. §103(a) over Chen et al. (U.S. Publication No. 2001/0051714) in view of Giaever (U.S. Patent No. 3,979,184) or Dickinson (WO Publication No. 01/18524).

As an initial matter, the Appellants would like to group the claims as follows: Group I: Claims 1 – 2, 10, 13-14, 20, 23 and 24; Group II: Claims 3 and 26; Group III: Claims 4 and 15, Group IV: Claims 5 and 16; Group V: Claims 6 and 17; Group VI: Claim 9; Group VII: Claims 12 and 22 and Group VIII: Claims 27 and 28.

In this rejection, the Office asserts that Claims 1 – 6, 9 – 10, 12 – 17, 20, 22 – 24 and 26 – 28 are allegedly rendered obvious over Chen et al. (U.S. Publication No.

2001/0051714) in view of Giaever (U.S. Patent No. 3,979,184) or Dickinson (WO Publication No. 01/18524). In making this rejection, the Office asserts that Chen discloses a flexible array assembly that includes a plastic base layer, a glass layer and a metallic material layer in between the base layer and the glass layer. The Office acknowledges that Chen does not teach the light blocking properties of the metallic layer. Accordingly, the Office relies on Giaever or Dickinson to remedy this deficiency.

According to the M.P.E.P. § 2143 to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that the Office's *prima facie* case of obviousness is deficient at least because one of skill in the art would not be motivated to combine the cited references in the manner suggested by the Office. Below are the contentions of the Appellant with respect to the grounds of rejection as stated above, with a separate subheading for groups of claims argued together.

Group I: Claims 1 – 2, 10, 13-14, 20 and 24

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on the front surface from reaching the plastic base layer.

Chen is directed to a flexible substrate probe carrier, such as a tape or fiber carrier that may be configured as a pin, rod, coil or spool. Paragraph 66 of Chen states:

> "For immobilizing polynucleotides and polypeptides, silica, i.e. pure glass, is a preferred material because polynucleotides and polypeptides can be covalently attached to a treated glass surface and silica gives out a minimum fluorescent noise signal. The silica may be a layer on another material, or it may be the substrate, core or base material of the apparatus, or both. One embodiment of the present invention comprises a metal wire as the core substrate, with a coating of silica on it for probe immobilization. Another embodiment comprises a plastic or polymer tape as a base substrate, with a coating of silica for probe embodiment. In this embodiment, a further layer of metallic material may be added, either on the opposite side of the tape from the silica layer, or sandwiched between the silica layer and the polymer or plastic. Yet another embodiment of the invention is a silica fiber with a layer of metallic material on the silica core and another layer of silica on the metallic material; probes are immobilized on this outer silica layer." (emphasis added)

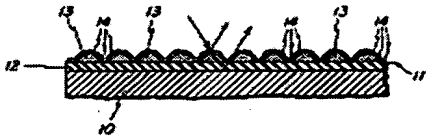
The Office equates the metal in-between layer set forth in Chen with the light blocking layer claimed by the Appellants. In view of this passage, the Office asserts that outside of the light-blocking properties of the Appellants' claimed in-between layer, Chen teaches the same basic components as presently claimed by the Appellants. The Office, therefore, asserts it would be obvious to substitute the metal layers taught in Giaever or Dickinson with the metal layer as claimed by the Appellants so as to derive the claimed invention.

The Office asserts that one would be motivated to apply the metallic layers of Giaever or Dickinson to the metallic layer in the assembly of Chen for the asserted benefit of more efficient signal collection, as taught by Dickinson, or for the very good interference colors from a high index of refraction as taught by Giaever. The Appellants, however, disagree and contend that there is no motivation to modify Chen in view of the cited references in the manner suggested by the Office because the properties for which the Office uses as a motivation to combine the references are not

due to the presence of a light blocking layer in-between a plastic base and glass layer, but rather are due to other design features of the respective inventions of the supplemental references. Hence, one of skill in the art would not be motivated to combine the references in the manner suggested by the Office and even if one were to do so, a completely different device from that claimed by the Applicants' would be derived.

The Appellants contend that the benefits cited by the Office to be achieved by modifying Chen in view of Giaever would not motivate one of skill to modify Chen in the manner suggested by the Office.

As can be seen with reference to the drawing set forth in Giaever (reproduced herein below), Giaever discloses a base layer (10) that may be glass or plastic that is coated with a metal (not shown). Bonded directly to the surface of the base layer is a transparent dielectric material (12). Adhered to the transparent dielectric material is a second (transparent) metal (13) that is in the form of Globules. See column 2, lines 51 to 61.



Accordingly, Giaever teaches a structure that includes a layer of metal globules over a dielectric layer. The "very good" interference colors produced by the assembly disclosed in Giaever, which the Office uses as a motivation to combine the references is not due to a metal layer that separates a plastic base layer and a continuous glass layer. Rather, this property is due to the interference characteristics produced by the metal globules (13) deposited on the surface of the substrate. See column 4, lines10 to 13, set forth herein below:

"The combination as described herein of the first metal surface, the dielectric layer and the second layer of metal produces very good interference colors from visible light incident thereon."

Accordingly, it is the interaction of second layer of metal globules with the other layers that provide for the beneficial property and not the mere presence of the first metal surface. In view of this, the Appellants contend that one of skill in the art would not be motivated to modify Chen in view of Giaever in the manner suggested by the Office, since Chen does not include metal globules.

Additionally, the Office further asserts that Dickinson teaches a plastic base layer, a glass layer, and a layer between the base and glass layers that blocks illuminating light. However, an element of the rejected claims is a continuous glass layer forward of the base layer. Dickinson does not teach a plastic base layer, a continuous glass layer and a non-transparent metal layer separating the plastic and continuous glass layers. Rather, Dickinson discloses a fiber optic bundle that may be covered by a non-fluorescent covering (such as gold, silver, chromium, platinum or indium oxide) upon which a population of microspheres is distributed on the surface. The Appellants point out, however, that a distribution of microspheres is not a continuous glass layer.

Hence, the "more efficient signal collection" property produced by the assembly disclosed in Dickinson, which the Office uses as a motivation to combine the references is not due to a metal layer that separates a plastic base layer and a continuous glass layer, rather it is due to the transduction characteristics produced by the microspheres deposited on the surface of the fiber optic bundles. The metal layer simply serves to reflect light back to the bead. Hence, as stated at page 11, lines 21 to 22, this results in the "optical signal of the bead itself [being] reflected thereby increasing the signal of the bead(s)." Accordingly, it is the interaction of the beads with the other layers that provide for the beneficial property and not the mere presence of the metal coating.

In view of this, the Appellants contend one of skill in the art would not be motivated to modify Chen in view of Dickinson in the manner suggested by the Office because the asserted motivating benefit is attributable to the glass beads, a structure not found in the Chen disclosure.

Therefore, the Appellants contend that a *prima facie* case of obviousness has not been established because there is no motivation to combine the references in the manner suggested by the Office. There is no motivation to modify Chen in view of Giaever or Dickinson because the properties for which the Office uses as a motivation to combine the references are not due to the presence of a light blocking layer in-between a plastic base and glass layer, as asserted by the Office, but rather are due to other design features of the respective inventions that have nothing to do with an intervening light blocking layer (e.g., metal globules or microspheres). Accordingly, the Appellants respectfully request the reversal of the 35 U.S.C. § 103(a) rejection of Claims 1-6, 9-10, 12-17, 20, 22-24 and 26-28.

Group II: Claims 3 and 26

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and an opaque layer between the base and glass layers that blocks at least 10% of an illuminating light incident on the front surface from reaching the plastic base layer.

In addition to the arguments detailed above for the Claims of Group I, the Appellants would like to further point out that, with respect to Claims 3 and 26, none of the cited references teach or suggest an opaque layer between the base and glass layers.

The Office asserts that Chen discloses an opaque metallic layer between the base and glass layers and cites paragraph 66 for support. However, the cited passage

simply indicates a metallic layer may be included between a base and a glass layer. Contrary to the assertion by the Office the cited passage does not indicate that the metallic layer is opaque. As metal layers may be transparent (e.g., see Giaever) and Chen fails to specify whether the metal layer disclosed is non-transparent, Chen does not teach or suggest an opaque layer between the base and glass layers.

The Office asserts that Giaever discloses an opaque metallic layer between the base and glass layers and cites the Abstract for support. However, the Abstract merely discloses a device having a non-transparent metal coated base or transparent metal surface globules. The disclosed in-between layer is a dielectric material that is not opaque. Hence, contrary to the assertion by the Office, Giaever, does not teach or suggest an opaque layer between the base and glass layers. The Appellants, therefore, respectfully request the reversal of this rejection.

Group III: Claims 4 and 15

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a reflective layer between the base and glass layers.

In addition to the arguments detailed above for the Claims of Group I, the Appellants would like to further point out that, with respect to Claims 4 and 15, Chen does not teach or suggest a reflective layer between the base and glass layers. Additionally, to the extent a *prima facie* case can be established with respect to Dickinson, the *prima facie* case is rebutted because Dickinson actually teaches away from the Appellants' claimed invention.

The Office asserts that Chen discloses a reflective metallic layer between the base and glass layers and cites paragraph 66 for support. However, the cited passage simply indicates a metallic layer may be included between a base and a glass layer.

Contrary to the assertion by the Office the cited passage does not indicate that the metallic layer is reflective. As metal layers may be transparent (e.g., see Giaever) and Chen fails to specify whether the metal layer disclosed is reflective, Chen does not teach or suggest a reflective layer between the base and glass layers.

The Office asserts that Dickinson discloses a reflective metallic layer between the base and glass layers and cites page 11, lines 18-25 for support, see below:

> An additional benefit to coating a microarray substrate material is that it becomes more efficient at signal collection as a result of signal reflection. That is, the optical signal of the bead itself is reflected thereby increasing the signal of the bead(s). There are a variety of coatings that find use in this invention. These include but are not limited to gold, silver, chromium, platinum or indium tin oxide.
>
> In one embodiment, the substrate contains two surfaces. That is, for example, a fiber optic bundle contains a proximal and a distal end or a planar substrate contains a top and a bottom surface. Accordingly, in one embodiment, a reflective coating is applied to the surface that contains the discrete sites or wells. Alternatively, the reflective coating is applied to the surface of the substrate that does not contain the discrete sites or wells.

As can be seen, this passage indicates that the increased signal collection properties of the system are due to the reflective interaction between the "beads" and the metal coating of the microarray substrate. Accordingly, the cited passage actually teaches away from the claimed invention because it teaches that signal strength can be increased by using a collection of "beads" to increase optical signal strength, where as an element of the rejected claims is a continuous glass surface layer. Accordingly, Dickinson teaches the use of "beads" rather than a "continuous" glass layer and therefore actually teaches away from the claimed invention. According to the M.P.E.P. § 2145 it is improper to combine references where the references teach away from the claimed invention. The Appellants, therefore, respectfully request the reversal of this rejection.

Group IV: Claims 5 and 16

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a reflective metal layer.

In addition to the arguments detailed above for the Claims of Group I, the Appellant would like to further point out that, with respect to Claims 5 and 16, none of the cited references teach or suggest a reflective metal layer between the base and glass layers that blocks at least 10% of an illuminating light incident on the front surface from reaching the plastic base layer.

The Office asserts that Chen discloses a reflective metallic layer between the base and glass layers and cites paragraph 66 for support. However, the cited passage simply indicates a metallic layer may be included between a base and a glass layer. Contrary to the assertion by the Office the cited passage does not indicate that the metallic layer is reflective. As metal layers may be transparent (e.g., see Giaever) and Chen fails to specify whether the metal layer disclosed is reflective, Chen does not teach or suggest a reflective metal layer between the base and glass layers. The Appellants, therefore, respectfully request the reversal of this rejection.

Group V: Claims 6 and 17

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a reflective layer between the base and glass layers comprising multiple layers of dielectric materials.

In addition to the arguments detailed above for the Claims of Group I, the Appellant would like to further point out that, with respect to Claims 6 and 17, none of the cited references teach or suggest a reflective layer between the base and glass

layers comprising multiple layers of dielectric materials.

The Office asserts that Chen discloses a dielectric reflective layer, however, contrary to the assertion by the Office, Chen makes no reference to the in between layer being a dielectric material. Additionally, although Giaever makes reference to a layer that includes a dielectric material it does not teach or suggest multiple layers of dielectric materials.

Accordingly, neither Chen nor Giaever teach or suggest all the elements of the claimed invention, namely a reflective layer between the base and glass layers comprising multiple layers of dielectric materials. The Appellants, therefore, respectfully request the reversal of this rejection.

Group VI: Claim 9

Claim 9 is directed to a flexible array assembly wherein the array assembly includes a plastic base layer that absorbs at least 10% of light at 532 nm incident on a front surface of the assembly, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on the front surface from reaching the plastic base layer.

In addition to the arguments detailed above for the Claims of Group I, the Appellant would like to further point out that, with respect to Claim 9, none of the cited references teach or suggest a base layer that absorbs at least 10% of light at 532 nm incident on a front surface of the assembly.

The Office asserts that the recitation in the claim that the base layer absorbs at least 10% of light at 532 nm incident on a front surface of the assembly merely describes a functional aspect of the base layer and does not structurally differentiate Claim 9 from Claim 4. The Appellants disagree. Not all plastics absorb light to the same extent. Recitation in the claim of the base layer absorbing at least 10% of light at

532 nm incident on a front surface of the assembly not only differentiates the type of plastic base layer that may be used but further differentiates how the base layer element interacts with the rest of the assembly in that it absorbs at least 10% of light at 532 nm incident on a front surface of the assembly. Accordingly, the Appellants contend that the recited element does not merely describe a functional aspect of the device but rather structurally differentiates the base layer of Claim 9 from the base layer of the claims from which Claim 9 depends and therefore Claim 9 is patentable. The Appellants, therefore, respectfully request the reversal of this rejection.

Group VII: Claims 12 and 22

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on the front surface from reaching the plastic base layer, wherein the assembly is in the form of an elongate web.

In addition to the arguments detailed above for the Claims of Group I, the Appellant would like to further point out, with respect to Claims 12 and 22, that none of the cited references teach or suggest an assembly that is in the form of an elongate web.

The Office asserts that Chen discloses an assembly that is in the form of an elongated web. In support of this assertion the Office cites paragraph 77, set forth below.

> "[0077] The substrate is elongated. "Elongated," as used herein, means that the length:width ratio of the substrate exceeds about 5:1, preferably exceeds 100:1, more preferably exceeds 1000:1, and most preferably exceeds 10,000:1. It is contemplated that the length: width ratio

> can be even greater, such as at least 100,000:1 or at least 1,000,000:1. As defined above, "width" of the substrate is defined as the length of the longest perpendicular to the long axis of the substrate which is entirely contained within the substrate. If the substrate is of varying widths, the width to be used to calculate the length:width ratio is the longest width. "Width" of the probe-containing portion of the substrate is defined as the longest arc (for an arc shaped probe-containing area, as is typically found on a cylindrical thread-like substrate) or the large lineal distance for a flat substrate, contained within the probe-containing portion of the substrate, which is perpendicular to the long axis of the probe-containing portion of the substrate. "Length" of the substrate is defined as the length of the long axis of the substrate. If the substrate has more than one length, the shortest of the lengths is used to calculate the length: width ratio."

However, as can be seen above, paragraph 77 makes no mention of the assembly being in the form of an elongated web. Accordingly, contrary to the assertion of the Office, Chen does not teach or suggest an assembly that is in the form of an elongate web. Because Chen does not teach or suggest all of the elements of the rejected claims it does not render the claimed invention obvious. The Appellants, therefore, respectfully request the reversal of this rejection.

Group IX: Claims 27 and 28.

The claims of this group are directed to a flexible array assembly and a method of fabricating the flexible array assembly wherein the array assembly includes a plastic base layer, a continuous glass layer forward of the base layer, an array of polymers having a pattern of features on a front surface of the glass layer and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on the front surface from reaching the plastic base layer, wherein the assembly further

includes a bonding layer between the base layer and light blocking layer.

In addition to the arguments detailed above for the Claims of Group I, the Appellant would like to further point out that, with respect to Claims 27 and 28, none of the cited references teach or suggest an assembly that includes a bonding layer between the base layer and light blocking layer.

The Office acknowledges that Chen is silent as to the element of a bonding layer between the base layer and light blocking layer. The Office therefore turns to Giaever to provide this element. For support of this element the Office cites to column 3, lines 24-29, wherein it is stated:

> "If the first metal is applied as a layer over a different substrate e.g. a layer of titanium on a plastic substrate, such as polystyrene, the metal layer should be sufficiently thick so that the layer is not transparent to visible light and yet not so thick that there is any danger of it not remaining firmly adhered to the substrate during commonly encountered changes in temperature. A suitable thickness of titanium metal in such a construction has been found to about 2000 (angstroms (A)."

As can be seen with reference to the above cited passage, contrary to the assertion of the Office, Giaever does not teach a bonding layer between the base layer and light blocking layer. Rather, Giaever teaches that when the substrate is to be covered by a metal it is important that the metal not be so thick that it does not remain firmly adhered to the substrate. This in no way teaches or suggest a bonding layer between the base layer and light blocking layer.

Accordingly, neither Chen nor Giaever teach or suggest all the elements of the claimed invention, namely, a bonding layer between the base layer and light blocking layer. Because Chen and Giaever do not teach or suggest all of the elements of the rejected claims they do not render the claimed invention obvious. The Appellants, therefore, respectfully request the reversal of this rejection.

III. Claims 7 and 18 are not obvious under 35 U.S.C. §103(a) over Chen et al. (U.S. Publication No. 2001/0051714).

In this rejection, the Office asserts that Claims 7 and 18 are allegedly rendered obvious over Chen et al. (U.S. Publication No. 2001/0051714). In making this rejection, the Office asserts that Chen discloses a flexible array assembly that includes a plastic base layer, a glass layer and a metallic material layer in between the base layer and the glass layer. The Office has previously acknowledged that Chen does not teach the light blocking properties of the metallic layer (see above). Claim 7 depends from and incorporates all the elements of Claim 1 and Claim 18 depends from and incorporates all the elements of Claim 14. Both Claims 1 and 14 include the element of a layer between the base and glass layers that blocks at least 10% of an illuminating light. Chen does not teach or suggest this element because Chen is completely silent as to the light blocking properties of the metal layer. Accordingly, a *prima facie* case of obviousness cannot be established because Chen does not teach or suggest the light blocking properties of the intermediate layer. Accordingly, the Appellants respectfully request the reversal of the 35 U.S.C. § 103(a) rejection of Claims 7 and 18.

SUMMARY

I. Claims 1 – 10, 12 – 20, 22 – 24 and 26 do not contain new matter and do comply with the written description requirement of 35 U.S.C. §112, first paragraph, because the term "continuous" with reference to the glass layer is fully supported by the specification as originally filed, and therefore does not constitute new matter.

II. Claims 1 – 6, 9 – 10, 12 – 17, 20, 22 – 24 and 26 – 28 are not obvious under 35 U.S.C. §103(a) over Chen et al. in view of Giaver or Dickinson because there is no motivation to combine the references in the manner suggested by the Office.

III. Claims 7 and 18 are not obvious under 35 U.S.C. §103(a) over Chen et al. because Chen does not teach or suggest the light blocking properties of the intermediate layer.

RELIEF REQUESTED

The Appellant respectfully requests that all rejections of Claims 1-10, 12-20, 22-24 and 26-28 as well as the objections to Claims 8 and 19 be reversed and that the application be remanded to the Examiner with instructions to issue a Notice of Allowance.

Respectfully submitted,

Date: May 10, 2006 By: _____
James S. Nolan
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Date: May 10, 2006 By: _____
Bret Field
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CLAIMS APPENDIX

1. An array assembly comprising:

(a) a plastic base layer;

(b) a continuous glass layer forward of the base layer;

(c) an array of polymers having a pattern of features on a front surface of the glass layer; and

(d) a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on said front surface from reaching said plastic base layer;

wherein said array assembly is flexible.

2. An array assembly according to claim 1 wherein the polymers are biopolymers.

3. An array assembly according to claim 1 wherein said layer between the base and glass layers is opaque.

4. An array assembly according to claim 1 wherein said layer between the base and glass layer is reflective.

5. An array assembly according to claim 4 wherein the reflective layer comprises a metal.

6. An array assembly according to claim 4 wherein the reflective layer comprises multiple layers of dielectric materials.

7. An array assembly according to claim 4 wherein the glass layer has a thickness of 40-200 nm.

8. An array assembly according to claim 4 wherein the plastic base layer has a

fluorescence of at least ten reference units, wherein a reference unit is the integrated maximum fluorescence energies from 547 nm to 597 nm obtainable from a 1 mm thick section of fused silica when said silica is irradiated by a monochromated high pressure Xe lamp excitation source centered at 532 nm with a width at half-maximum of about 5 nm.

9. An array assembly according to claim 4 wherein the plastic base layer absorbs at least 10% of light at 532 nm incident on a front surface of the assembly.

10. An array assembly according to claim 1 additionally comprising an identifier on a back surface of the plastic base layer.

12. An array assembly according to claim 1, wherein the assembly is in the form of an elongated web.

13. An array assembly according to claim 12 with multiple arrays disposed along the front surface of the glass layer.

14. A method of fabricating a flexible array assembly comprising:
providing a plastic base layer with a continuous glass layer bound thereto at a position forward of the plastic base layer and a layer between the base and glass layers that blocks at least 10% of an illuminating light incident on a front surface of said glass layer from reaching said plastic base layer; and
forming an array of polymers having a pattern of features on a front surface of the glass layer.

15. A method according to claim 14 wherein the layer between the base and glass layers is reflective.

16. A method of claim 14 wherein the layer between the base and glass layers comprises a metal.

17. A method of claim 16 wherein the layer comprises multiple layers of dielectric materials.

18. A method according to claim 14 wherein the glass layer has a thickness of 0.40 to 200 nm.

19. A method according to claim 14 wherein the plastic base layer has a fluorescence of at least ten reference units, wherein a reference unit is the integrated maximum fluorescence energies from 547 nm to 597 nm obtainable from a 1 mm thick section of fused silica when said silica is irradiated by a monochromated high pressure Xe lamp excitation source centered at 532 nm with a width at half-maximum of about 5 nm.

20. A method according to claim 14 additionally comprising forming an identifier on a back surface of the plastic base layer.

22. A method according to claim 14, wherein the assembly is in the form of an elongated web.

23. A method according to claim 14 wherein multiple arrays are formed by depositing drops onto the front surface of the glass layer, which contain the polymers or polymer precursor units.

24. A method according to claim 23 wherein the polymers are polynucleotides or peptides.

26. A method according to claim 14 wherein the layer between the base and glass layers is opaque.

27. An array assembly according to claim 1, further comprising a bonding layer between said base layer and said light blocking layer.

28. A method according to claim 14, further comprising adding a bonding layer between said base layer and said light blocking layer.

EVIDENCE APPENDIX

No evidence that qualifies under this heading has been submitted during the prosecution of this application, and as such it is left blank.

RELATED PROCEEDINGS APPENDIX

As stated in the *Related Appeals and Interferences* section above, there are no other appeals or interferences known to Appellant, the undersigned Appellant's representative, or the assignee to whom the inventors assigned their rights in the instant case, which would directly affect or be directly affected by, or have a bearing on the Board's decision in the instant appeal. As such this section is left blank.

J-12-06

AF/1634

IAP/4

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Carol T. Schembri

Serial No.: 10/037,757

Examiner: Betty J. Forman

Filing Date: October 18, 2001

Group Art Unit: 1634

Title: CHEMICAL ARRAYS

COMMISSIONER FOR PATENTS
P.O. Box 1450
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TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 03-28-2006

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) **$500.00**.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

☐	one month	$ 120.00
☐	two months	$ 450.00
☐	three months	$1020.00
☐	four months	$1590.00

☐ The extension fee has already been filled in this application.

☒ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **50-1078** the sum of $500.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

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☒ I hereby certify that this correspondence is being deposited with the United States Postal Service as ~~Express~~ mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Typed Name: Donna Macedo

Signature: D. Macedo

Respectfully submitted,

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